Request For California Public Interest Gas Research and Development Project Concept Abstracts for the 2006 Program Year

In August of 2004, the California Public Utilities Commission (CPUC) issued an Order that tentatively established an annual budget for public interest natural gas research and development (R&D) projects to be administered by the California Energy Commission (Energy Commission). The tentative annual budget for 2006 is $15 million. The CPUC and Energy Commission are preparing a prioritized list of research areas that meet the CPUC's criteria for funding in 2006.

Per the CPUC, public interest gas R&D activities are directed towards advancing science or technology, 1) the benefits of which accrue to California citizens and 2) are not adequately addressed by competitive or regulated entities. Projects should be responsive to the following criteria:

1) Focus on energy efficiency, renewable technologies, air quality, climate change and advanced generation research issues,
2) Support State Energy policy, see California Energy Action Plan for information on related policy objectives (http://www.energy.ca.gov/)
3) Offer a reasonable probability of providing benefits to the general public, and
4) Consider opportunities for collaboration and co-funding opportunities with other entities

The Energy Commission received 209 abstracts in response to its request, posted July 5, 2006. The due date for abstracts was August 1, 2005. The list of abstracts can be viewed at the following URL:

www.energy.ca.gov/naturalgas_research/

The abstracts will be ranked as follows:

ABSTRACT RANKING PROCESS

I. Screening

Screen 1: Does the Project Abstract describe a public purpose natural gas R&D activity – yes or no?

- If yes, abstract proceeds to next screen
- If no, abstract is not reviewed further

Screen 2: Does the Project Abstract fit into one of the identified Program Research Areas Identified by CPUC Order and Energy Commission staff?

If yes, the abstract is assigned to the appropriate Program Area for ranking in Screen 3. If the abstract spans multiple Program Areas it is assigned to each one for ranking in Screen 3.

- If no, the abstract is assigned to the "Other" Program Area.

II. Scoring

Screen 3: Project Abstracts are ranked, within each Program Research Area.

The abstracts are ranked as *high, medium or low* potential using the following group of subjective criteria:

- Subject Area Fit
- Potential Benefits
- Connection to State Energy Policy and gas issues identified in California Energy Action Plan
- Potential for success, reasonable probability of providing benefits to the general public
- Whether adequately addressed by competitive or regulated entities
- Consideration of opportunities for collaboration and co-funding opportunities with other entities

Abstracts in the "Other" Program Research Area category are probably ranked either medium or low. This is because they do not meet one of the criteria, which is fitting into one of the defined Program Areas – which relate to the CPUC order criteria. However, it is possible that a project abstract may cause a rethinking of the Program Research Initiatives that have been selected.

The ranked and screened abstracts will be included in the 2006 Public Interest Energy Research Natural Gas Program Plan to be submitted to the CPUC on August 31, 2005.

ID#	Title	Author
1	A NEW CLASS OF ARICES MINIMIZING ENGINE EMISSIONS & sfc	Pao Chi Pien
2	Natural gas replacement/synthesis using waste gasification	Leland T. Taylor, Thermogenics Inc.
3	Sitegen	RCSystems
4	Bay Island Biodiesel Pilot Project	Martin Kurtovich, P.E.
5	Renewable Biogas Solid Oxide Fuel Cell Development	David Tsay
6	High Performance Compact Integrated Appliance	Richard F. Topping P.E.
7	Heating Only Gas-Fired Heat Pump	Richard F. Topping P.E.
8	Pendulating Gravity Sail Prototype Developement Project	Jonathon E. Mooring
9	Natural Gas Powered Steam/Gas-Electric Locomotive	Thomas W. Blasingame
10	Natural Gas Powered Steam/Gas-Electric Truck/Tractor	Thomas W. Blasingame
11	Natural Gas Powered Dual Fuel Diesel-Electric Locomotive	Thomas W. Blasingame
12	Natural Gas Powered Steam/Gas-Electric Tug Boat Propulsion System	Thomas W. Blasingame
13	Stationary Photovoltaic Modules with Parabolic-Prismatic Concentrators	Dr. Sergey N. Kivalov
14	Printed Photovoltaic Roofing Material	Dr. Russell Gaudiana
15	Absorption Power and Refrigeration Cycle	Hank Leibowitz
16	California-Mexico Natural Gas Issues	Rick Van Schoik, SCERP
17	Ultra-Low NOx Duct Burner for Natural Gas-Fired CHP Turbines	Kenneth O. Smith
18	Ultra-Low NOx Gas Turbine Combustion System for Landfill Applications	Kenneth O. Smith
19	A Desiccant-Assisted Evaporative Cooler for Commercial Buildings	Andrew Lowenstein
20	Coal Gasification	William A. Lansville
21	Cost Effective Landfill Gas To LNG Processing Technology	CryoEnergy International, Inc.
22	Gas fired Heat Pump for Commercial and Light Industrial Applications	Robert Panora, Tecogen, Inc.
23	Radiation Fog, Lower Temperatures, and Natural Gas Use in Central CA	Dr. Jeffrey Underwood
24	Infrared Biogas Sensor	Carthago International Solutions, Inc.
25	Intrinsically Safe Gas Sensor	Carthago International Solutions, Inc.
26	Bio-Hydrogen from wood waste with mixed culture of microorganisms	Richard W. Prosser - GC Environmental Inc.
27	Hydrogen from Coal and Sunshine	Dr. Sergey N. Kivalov
28	Demonstartion of High Efficiency Natural Gas CHP Systems in California	Prashant S. Chintawar
29	Gas Engine-Driven Chiller in Innovative Heating Application	James D. Corlett
30	“Effects of Fuel Gas Composition for Natural Gas Engines"	Dr. Daniel Olsen
31	Ignition System Development for High BMEP Natural Gas Engines	Dr. Daniel Olsen
32	A New Concept in High Efficiency Natural Gas Fired Space Heating	Charles Hannon
33	Aggregated Methane Production at Concentrated Animal Feeding Operation	John M Brown

34	Natural Gas Pump Using Water Agency Efficiency Improvements	Water and Energy Consulting - Lon W. House, Ph.D.
35	Gas Supply Strategic Plan and Collaborative Assessment	Paul Brooks
36	Gas Interchangeability-Impacts of Alt. Gas Supplies on Gas Appliances	Paul Brooks
37	Environmental/Economic Impacts from CHP and Digesters at Hog Farms	Steffen Mueller, PhD
38	Compressed Air Energy Storage and Enhanced Gas Recovery:	Curtis M. Oldenburg (LBNL), and Pat Ross (Princeton Natl Gas LLC)
39	Optimizing or eliminating reheat in high tech buildings	William Tschudi
40	Feasibility of CO2 as Cushion Gas for Natural Gas Storage	Curtis M. Oldenburg
41	California's economy and a constrained natural gas future	Coughlin, Katie; Fridley, David; Masanet, Eric; Rosenquist, Greg
42	High Efficiency Engine Systems through Waste Heat Utilization	Daniel Olsen, PhD
43	Aftertreatment Technologies for Lean Burn Natural Gas Engines	Daniel Olsen, PhD
44	LNG Terminal Safety & Security Study	Ray Smith
45	Renewables in Commmercial, Institutional and Industrial Markets	Paul Bautista
46	Synergistic Efficiency & Emissions Enhancements for Industrial Heating	Robert K. Cheng
47	Near-zero Excess air Ultra-clean Industrial & Commercial Burners	Robert K. Cheng
48	Dimethyl Ether Alternative Fuel	Ray Smith
49	Gas-Electric Industry Coordination and Reliability Enhancement	Jeremy Platt
50	Off-Peak Electricity Storage for Peak-Demand D.G. Applications	John Halloran, P.E.
51	Natural Gas as a Bridge to Hydrogen Sourced Energy Solutions	Dan McCormick
52	Comprehensive Roadmap for transformation to Clean City with NGVs	Rusi Patel and Henry DeLima
53	Outlook For LNG: A Global Assessment	Energy Ventures Analysis, Inc.
54	Development and Application of a New Wind Energy Forecast System	Steve Chin
55	Chemical recuperation of natural gas feed for gas turbines	Barney Rush
56	Benefits from a Statewide Natural Gas Energy Efficiency Program	Athanasios (Tony) Bournakis, Ph.D., Principal Research Economist
57	Catastrophic Earthquake Risk Analysis and Remediation	Stuart Nishenko and Yousef Bozorgnia
58	The new compact external combustion engine	Dr. Sergey N. Kivalov
59	Conic Threaded Fasteners	Dale E. Van Cor
60	Low-Cost Sensors for Efficiency Optimization of Large Gas Burners	David Littlejohn and Donald Lucas
61	Conic Pipe Threads	Dale E. Van Cor
62	Conic Threaded Valve	Dale E. Van Cor
63	Efficient and Ultra Low Emissions Supplemental Firing Burner for CHP	Dr. John T. Kelly
64	High Efficiency Gas Fired Radiant Burner	John T. Kelly
65	High Efficiency Gas Engine Driven Heat Pump	Dr. John T. Kelly
66	High Air Preheat Low Emissions Heat Recovery Burner	Dr. John T. Kelly
67	Low NOx Waterheater Burner	Dr. John T. Kelly

68	Modelling Natural Gas Systems in Various Power Generation Scenarios	Paul Bautista
69	Unitary LiBr Absorption Heating and Cooling System	Neil Leslie
70	Gas Fired Agricultural/Industrial Dryer Heat Pump	Donald C. Erickson
71	Solar Thermal Energy Alternative to Natural Gas	Charles L. Bennett
72	Climate change impacts on energy generation and demand	Philip B. Duffy
73	Natural draft Low NOx Burners for Water Heaters and Furnaces	David Littlejohn and Robert Cheng
74	Nanotechnology Based Sensors	Donald Lucas
75	Ultra-Clean Residential and Commercial Space Heaters	David Littlejohn and Robert Cheng
76	Low Emission Burners for Secondary Heating Applications	David Littlejohn and Robert Cheng
77	Design of an Energy-efficiency Incentive Program	Rupert Kruger and Paul Taylor
78	Low-emission Fuel-flexible Burner for Natural Gas and Renewable Fuels	David Littlejohn and Robert Cheng
79	An Integrated, Low-CO2 Emission Power Plant for California	Daniel Chinn
80	California Residential IAQ Study Update	A.L. Wilson
81	Repowering of California Utility Boiler Plants	Ashok Rao
82	LNG Terminal Hydrogen Production/Liquefaction Integration	Charles Powars
83	LNG Retrofit system for Diesel to LNG Lean Burn System	Karl Jacobi
84	National Gas Efficiency Program Conference Co-Sponsorship	James Fay
85	Advanced Usage of Syn Gas Reactions for Direct Electricity Generation	Dr. Savas Vasileiadis (lead), Dr. Zoe Ziaka
86	Dual-output gas turbine engine	Dale E. Van Cor
87	Catalyzed Combustion to improve natural gas combustion	Dr. Brian Ahern & Curtis Firestone (Catalyzed Combustion Associates)
88	Cool Flame Methane Reformation	Professor Howard Pearlman
89	Low-Cost Condensing Commercial Water Heater	Joseph Gerstmann
90	Small-Scale Solar Combined Heat and Power Demonstration	Dennis A. Dudzik, P.E.
91	Industrial Plant Air-Makeup and Space Heating Efficiency	Stephen J. Sikirica, R&D Manager – Process Heating
92	Best Practices to Assist Utilities in Reducing Emissions of Natural Ga	Glyn Hazelden
93	CARB CHP Building Efficiency Assessment.	Marek Czachorski
94	Co-Production of Hydrogen and Electricity from Natural Gas	Kevin Krist
95	Solar Chiller - Renewable Energy Project	Chevron Energy Solutions - Gregory Coxsom
96	Distributed Production of Hydrogen	John M. Pratapas
97	Advanced Gas Water Heater	D. Kalensky, R. Knight
98	Gas Engine-Driven Combination Heat Pump and Standby Generator	Neil Leslie
99	Dual Natural Gas – Electric Hybrid Heaters	Stephen J. Sikirica, R&D Manager – Process Heating
100	High Efficiency Gas-Fired Drum Dryer for Food Processing	Yaroslav Chudnovsky, Ph.D.
101	Hydrogen Fueling Station Development and Demonstration	William Liss

102	High-Temperature Proton Exchange Membrane (PEM) Technology Development	Dr. Chinbay Fan
103	Low-Cost Real-Time Hydrocarbon Dew Point Measurement Tool	Dr. Ram Sivaraman
104	Ultra-Efficient Hydronic Heating Systems	R. Knight, D. Kalensky
105	High Efficiency Low NOx Immersion Fluid Heater	Yaroslav Chudnovsky, Ph.D.
106	High Efficiency Industrial Ovens	Stephen J. Sikirica, R&D Manager – Process Heating
107	In-Situ NOx and O2 Sensors	D. Chojnacki, J. Rabovitser
108	Field Demonstration of Low NOx/CO Burners for Crude Oil Heaters	D. Cygan
109	Low NOx Residential Gas Water Heater Operational Durability Program	Rich VanCamp
110	Energy and Water Recovery from Flue Gas Using Nanoporous Membrane Tech	D. Chojnacki, D. Wang
111	Natural Gas Heating-Value Sensor	Serguei Zelepouga, PhD
112	Net Zero Peak Electric Building Energy System	John Kelly, Greg Rouse, and Marek Czachorski
113	On-Line Inspection of Pressure Vessels and Pipes	Serguei Zelepouga, PhD
114	Power Generation from Waste Energy – Advanced Cycles	John Kelly and Greg Rouse
115	Non-Destructive Evaluation and Monitoring of Composite Pressure Vessel	Mark Richards
116	Renewable Methane Recovery and Utilization	William Liss
117	Model Community District Energy System – Research & Design	John Kelly and Marek Czachorski
118	Natural Gas Quality Requirements and Tradeoffs	Charles Powars
119	Benefits Assessment & Verification Contractor for the Gas R&D Program	Athanasios (Tony) Bournakis, Ph.D., Principal Research Economist
120	Public health benefits of natural gas emissions reductions	Lobscheid, Agnes and Thomas McKone
121	Low-Cost, Low NOx, 100% Premixed Natural Draft Water Heater Burner	Brady Krass
122	Minimum Effort Tight Duct System	Skip Mandracchia, Proctor Engineering Group
123	Enhancing Power Generation Efficiency with Concomitant CO2 Capture	Paul K.T.Liu
124	Low Cost - No Cost Therm Reduction	Jon Lee
125	BioMethane to Gasoline and Chemicals	Jeffrey H. Sherman
126	Nanotechnology gas flow sensor based flowmeters	Mr. Prasanna Chitturi
127	Increasing Underground Gas Storage Capacity Using Hydrate Technology	Dr. Ram Sivaraman
128	Natural Gas Energy Efficiency for Seniors in Older Homes	Rusi F. Patel and James Fay
129	Environmental/Economic Impacts from CHP at Landfills	Steffen Mueller, PhD
130	Real-Time XRF Nanotool for Underground Gas Storage Well Bores Integrit	Dr. Ram Sivaraman
131	High Efficiency Commercially Viable Solid Oxide Fuel Cells	Craig R Horne
132	Development of TCR with Process System-Waste Heat Recovery	Harry Kurek
133	Deployment of the Reverse Annulus Single Ended Radiant Tube (RASERT)	Harry S. Kurek
134	Sequestration of CO2 Emissions through Biocatalytic Mineralization	Diane Saber
135	Chemical CO2 Mitigation of Natural-Gas-Fired Power Plants	Greg H. Rau

136	GIS-based Field Notification of Protected Wetlands/Endangered Habitats	Diane Saber
137	Identifying the Sources of Methane Emissions through Environmental For	Diane Saber
138	Effects of Microbial Activities on the Integrity of Plastic Pipes: LNG	Diane Saber
139	Production of Nanoparticles by the Natural Gas Industry: Current Status	Diane Saber
140	On Line Chemical Reactive Control of HCCI Engines	Theodore T. Tsotsis
141	Impact of California Market Structure on Natural Gas Usage	LCG Consulting
142	Changing Gas Compositions in Western Gas Grid	Harry Vidas
143	Semiconducting Metal-Oxide Microsensors for Emission Monitoring	Hai Wang
144	Impact of Efficiency and Renewables on Natural Gas Prices	Kevin Petak
145	Impact Natural Gas Supply Disruptions on Electric and Gas Consumers	Kevin Petak
146	Valuation of Natural Gas Storage for Public Policy	Bruce Henning
147	High Compression Spark Ignition System	Karl Jacobi
148	Future Foreign Pollution: Impact on Nat. Gas & Air-Quality in Calif.	Philip Cameron-Smith
149	LNG Interchangeability for Power Generation Boilers	Rick Tidball
150	Collaborate Strategic Plan to Foster Renewable & Efficiency Investment	Richard Mrlik
151	Life-Cycle Cost and Energy Modeling of Home Water Heating Systems	Eric Masanet, Lynn Price
152	Natural-Gas-Assisted Cyclic Catalytic Autothermal Reforming of Biomass	Wyman Clark
153	Integrated OxGen/Reforming Process for Producing H2 from Natural Gas	Wyman Clark
154	Combined Electrical, Heat & Cooling Generation Onsite	H. Adam Bosschieter & Earl Schmid
155	Pulsed Reburning for NOx Control	Wyman Clark
156	Reduction in Infrastructure Requirements for Large House Developments	Ken Darrow
157	Low-Cost Reduction of Biofouling at Gas-Fired Power Plants	Greg H. Rau
158	Grease Control in Kitchen Ventilation Systems	Cherif Youssef
159	Gas Treatment Options for Sensitive Customers	Ken Darrow
160	Demand Control Ventilation in Kitchen Hoods	Cherif Youssef
161	Combined Heat and Power Market Impacts on Gas and Electric Pricing	Ken Darrow
162	Hydrogen Technology Park	Cherif Youssef
163	Gas Market and Infrastructure Implications of Gas Availablity	LCG Consulting
164	Locating and Characterizing Outdoor Natural Gas Leaks	Michael D. Sohn
165	Over-fired Broiler Improvements	Frank Johnson
166	Smart system diagnostic, monitoring & controls of emission-ProcessHtrs	Cherif Youssef
167	System Diagnostic, Monitoring & Controls of Emissions from IC Engines	Cherif Youssef
168	Gas Engine Air Compression	Cherif Youssef
169	Gas Engine Refrigeration	Cherif Youssef

170	Optimal Energy and Water Systems for Car Washes	James Fay
171	Advanced Usage of Syn Gas Reactions In Direct Fuel Cell Cycles	Dr. Savas Vasileiadis
172	Strategies for Energy-Efficient Natural Gas Technology RD&D Projects	Donald B. Kazama, P.E.
173	Sustainable Community Strategies, Santa Monica Demonstration Project	Cherif Youssef
174	Power Generation from Waste Energy – Catalytic Microturbine	John Kelly and Greg Rouse
175	Hybrid HVAC with TES	Cherif Youssef
176	Hybrid HVAC Cooling Plant	Cherif Youssef
177	Reduction of Lost and Unaccounted for Gas Volumes	Michael Whelan
178	Accommodating Liquefied Natural Gas (LNG)	Michael Whelan
179	Certified Low-Emission High-Efficiency CNG Industrial Truck Engine	Jo-Ann Yantzis and Greg Gilbert
180	condensing sidearm water heater	Jim Lutz
181	Accommodating Varying Gas Chemistries from Non-Traditional Gas Supplie	Michael Whelan
182	Communication Systems for Coordination of DG and Gas Delivery	James Fay
183	Laser Ignition System Demonstration for Natural Gas Pipeline Engines	Bryan Willson
184	Gas Transmission Measurement Equipment Operating Range Expansion	Michael Whelan
185	Pipeline Right-of-Way (ROW) Environmental Management	Michael Whelan
186	Chemical Synthesis from Natural Gas	Dr. Zoe Ziaka, Dr. Savas Vasileiadis
187	Increased PCB Mobilization in Transmission and Distribution Pipelines	Diane Saber
188	Natural Gas Impurities – Impact on Appliances and Equipment	Alex Lekov and Gabrielle Wong-Parodi
189	Infiltration and Ventilation Interactions with Gas Appliance Venting	Craig Wray
190	Automated Building Diagnostics/Continuous Commissioning Software	Cherif Youssef
191	Wind, Hydrogen, Natural Gas Hybrid System	Bryan Willson
192	Smart Technology-Communication Interface	Cherif Youssef
193	Natural gas price dynamics and forecasting models	Katie Coughlin, Alex Lekov and Gabrielle Wong-Parodi
194	Fast, ModerateTemperature Waste Gasification	Peter E. Jonker
195	Maximum Safe Loads On Buried Pipelines	Michael Whelan
196	Advanced Cycle-Resolved Engine Controls	Bryan Willson
197	Mitigating the effects of Landslides on Gas Transmission Lines	Michael Whelan
198	Advanced Production of LNG from Natural Gas	Dr. Savas Vasileiadis
199	Quantifying the net benefits of distributed generation	Douglas Saucedo
200	Demonstration of Tri-Generation of Electricity, Heat and Hydrogen	David Carter
201	Feasibility of Landfill Gas Utilization in the Natural Gas Grid	J. Bohn
202	Gas Research and Development Project Concept Abstract - Curbing Califo	Eric R. Coffman
203	Advanced Residential CHP Systems	William Steigelmann P.E.

204	Modeling Air Quality Consequences of Natural Gas Energy Generation	Peter Connell
205	Passive Energy Flue Dampers	Advanced Conservation Technology, Inc. (DBA: ACT, Inc Metlund Systems)
206	Use of natural gas in propane reforming for fuel cell application.	Dr. Zoe Ziaka
207	Absorption Heat pump Powered Dryer	H. Adam Bosschieter & Earl Schmid
208	Enhanced web-based analysis tool to reduce residential natural gas use	Evan Mills, Rich Brown
209	Closed Brayton Cycle Residential Energy Conservation System	Johan Wassenaar, Creative Energy Systems